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ABSTRACT

Educators should form a special task force, says the author, to help schools adjust to rapidly changing technology and accommodate society's consequent need for new skills. An introduction to a longer paper urges the school boards of Virginia to consider such a task force. In the larger paper the author first reviews the experiences that led to her interest in the future of education. Returning to the workforce after a long hiatus, she was impressed with the breadth of current technological change. Her involvement with education as a parent and student convinced her that educators were neither keeping pace with technological change nor preparing their students for it. In the paper's second section she notes some of the changes predicted because of evolving technology, including the expanded use of computers for teaching, reduced educational resources, increased lifelong learning, and the changing age composition of the workforce. The final section lists 15 considerations about the future that education must ponder and discusses the objectives and membership of the recommended task force. She suggests the task force assess the present state of education, project future technological changes, and identify the ways education must accommodate these changes. (EW)

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THE FUTURE AND EDUCATION:

PRESENTATION TO THE ARLINGTON SCHOOL BOARD AND THE STATE BOARD OF EDUCATION OF VIRGINIA

By

Polly Liss

September 1981

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PRESENTATION TO THE
ARLINGTON SCHOOL BOARD
AND THE
STATE BOARD OF EDUCATION OF VIRGINIA

By Polly Lins

It is the purpose of this presentation to recommend that a TASK GROUP be formed to guide the schools in their inevitable transition to meet the future.

The TASK GROUP should examine schools for the ways in which education is delivered currently, project changes that education will have to accommodate in the future, and recommend measures to make the transition possible.

Such a TASK GROUP should be appointed at both local and state levels and should be comprised of a broad spectrum of the education and general community: K-12 and post-secondary school administrators, teachers, counselors, librarians, students, parents, business, labor, industry, unions, professionals, and community-based organizations.

It is important that the initiative come from the education sector. If not, educators will lose the opportunity to assume leadership roles as shapers of change rather than reactors and adapters to change proposed and effected by others.

We must look ahead.

In the coming decade, there will be 20 million new jobs--mostly skilled and white collar jobs. Robots will have replaced many factory hands. "Electronic cottages" will enable increasing numbers of people to work at home.

While we cannot predict with precision what the jobs will be in 15 to 20 years, we do know we are heading toward a more technical, a more scientific type of society.

There will be growth in energy, electronics, defense-related industries and businesses, the food service industry, health care, the recreation area, the travel industry, marine biology. Opportunities will abound also in accounting, retailing, consulting, banking, legal assistance, and counseling. Environmental needs will receive a great deal of attention. Aging factories will require "facelifts." Farming will need a strong work force.

Technology will have an impact on all these areas. It will change the composition of the labor force.

To illustrate, take a look at the fashion industry, where the change is already evident: Today, computer-directed lasers are used for cutting. There are sound wave sewing machines, programmed stitching machines, and computer graphics. The need for low skill workers is being replaced by a demand for technicians.

What is education doing to prepare students for these changes in the job market?

How are students being prepared to understand and cope with the changes and to find options for themselves?

Are our educators prepared to deal with the technological changes, and the other human changes that will come in the wake of the new technology?

As change in education is a process requiring much time, and as there are numerous considerations involved in the process, it is urged that the appointment of a TASK GROUP to address the future be assigned the highest priority.

This presentation is accompanied by a paper I have written showing the evolution of my personal interest in this topic, citing anticipated changes and the need for planning as seen through the eyes of various educators and others who focus on the future, and concluding with a recommendation for the formation of a TASK GROUP to plan for the future.

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IT'S TIME FOR EDUCATORS TO ADDRESS THE FUTURE

By

Polly Liss

July 1981

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IT'S TIME FOR EDUCATORS TO ADDRESS THE FUTURE

By Polly Liss

INTRODUCTION

We are all familiar with the quotes on the National Archives building in Washington, D.C.: "What is past is prologue" and "Study the past." The former saying is attributed to Shakespeare, the latter to Confucius. They appear timeless; yet, we are in a new age with a new perspective to consider. Ours is an age of rapidly evolving technology that has no past--only a present and a future. In order to come to terms with this new era, our thinking will have to be based on an additional premise: "What is present is prologue--study the present; study the future."

Studies of this nature are vital if we are to meet the future without panic. Such study requires a well organized collective effort. To propose one such study is the purpose of this paper.

Initially, the paper deals with my personal experiences in arriving at the conclusion that the rapidity of technological change and the need to make appropriate accommodations for it are being ignored by education. I then go on to deal with some of the factors that will affect the delivery of education in the future and stress the need for planning. Finally, I present a proposal for consideration by both the Arlington School Board and the Virginia State Board of Education to appoint a TASK GROUP at both levels to examine present delivery and possible changes for future delivery of education.

I. HOW MY INTEREST IN THE FUTURE EVOLVED

Are we preparing for the future?

Educators are in the business of preparing people for "the future." Also, educators today have increasing responsibilities in the delivery of their expertise and services. In fact, because they are so busy, it is difficult for them to find time for reflection on what the "future" may be.

As a parent, a long-time volunteer activist in the education sector, and a believer in having curriculum relate more to the world outside academic walls, I assumed I was giving adequate thought to the future in pursuing my interests--and then I decided to return to the work force, and, later, to enroll in school myself.

Now, why should this change my perspective? Perhaps I'd better tell you a little about my background.

Personal background

In 1948, I received a Bachelor of Arts degree from the University of Alabama. My major was Spanish, and my minors were French and History. I was very fortunate--I was able to use my acquired knowledge in a job at the Pan American Union (the Secretariat of the Organization of American States) in Washington, D.C. When I left there in 1960 to raise my family, I was assistant editor of a four-language statistical journal serving a readership primarily on the continents of North and South America.

The cocoon

I found no end of occupation as a full-time housewife and mother and as a participant in a myriad of activities that I didn't even know existed when I was working. Yet, I became removed from the world outside my immediate sphere. I had sewn myself up in a cocoon.

I think the same thing happens with educators. On the whole, they seek out and engage in activities to further strengthen their knowledge in their field of expertise or to find relief from it in their leisure activities. Few are able to step back and look at the whole picture in which they are involved. Most educators, like other paid working people and like full-time wives, mothers, and community workers, also live in cocoons of their own making.

The paid work world as remembered in 1960

My own return to the work force afforded me a perspective I would have found difficult to acquire had I never left the paid work world. Indeed, my return to that world was a shock! When I had last worked for pay, there were so few computers in the world that many people had not even learned of their existence. Those computers were so large, they required special facilities to house them. Switchboard operators were common in business. Elevator operators were beginning to be uncommon. Electric typewriters were appearing everywhere, but not yet in my office. There was no such thing as a word processor. While television was in most homes, it served solely as a device to bring entertainment and information (mainly news) to the home consumer. It would have been considered crazy to think of using it also to play games or to be used in conjunction with computers in the sophisticated management of information that exists today. Also, the world was definitely more sexist, more racist, and, relatively speaking, nations were more isolated. Travel abroad was just becoming more accessible to the average person; and businesses, in greater numbers, were reaching across continents and oceans to establish multi-nation corporations.

Return to paid work

My first job on reentry in the world of work was with an engineering consulting company as a technical writer/editor. I hesitate to tell you what I thought a consulting engineer does or how the engineer does it, but I was prepared to see heavy boots, construction hats, compasses, and tripods for measuring instruments. What a revelation to find: (1) That all the employees dress for and are engaged in office work; (2) that there is usually no need for on-site work in carrying out contracts requiring engineering expertise; (3) that consulting firms are a major industry in this area; and (4) that evolving technology is largely responsible both for the growth of this industry and for changes in the nature of the professional and related jobs in the industry.

In my three and a half months on that job (my job was eliminated when the number of contracts decreased--writing and editing jobs are among the first to go--computer-related jobs stay!), I began to look around and realized that my husband, who has been involved with computers for many years in his work with the U.S. government, was not unique. Computers have entered everyone's lives to varying degrees every day. Unless one lives a truly rustic life in a remote area, it is impossible to be untouched today by some aspect of computer technology. This was emphasized even more in a course I took on the Principles of Data Processing last fall at the Northern Virginia Community College. Yet, how many of our students are studying about the use of the new technologies, including telecommunications and data and word processing?

It seemed to me then that to ride the big crest of the present/future wave that I should strive for proficiency in a computer field. Were it not for my experiences during the score of years that I stayed at home, I probably would have.

Education experiences from volunteer perspective

My immersion in various community and school-related groups during my nonpaid years all had as their origin the interest my husband and I have in our children's education. I started with all the usual volunteer tasks--chaperoning field trips and school events, helping with visual and hearing tests, working in school libraries, sending out newsletters, answering the telephone, plus a number of other activities that perhaps weren't so usual. I saw enough to realize that without volunteers in the schools, the burden on school personnel, in many instances, would be not only unfair but impossible to bear. Also, during that time, I became interested in specific school and curriculum areas and served an aggregate total of 14 years as a member of various county-wide school advisory committees dealing with foreign languages (8 years), English (2 years), special education (2 years), and school lunches (2 years). These school-board-appointed committees, comprised of Arlington citizens who are not paid employees of the school system, together with a liaison from the school administration, consider specific curriculum or other school-related areas. Serving on the advisory committees afforded me the opportunity to learn a great deal about curriculum and about human relations among and between educators and students. Most of all, I learned that informed citizens in the community not only can foster greater accountability in the schools, but also provide a resource of inestimable worth to both educators and students.

Missing facet of education

Along with these experiences, I looked at the education my children were receiving and became concerned about a missing facet of their education. That facet is called "career education." Who was helping my children learn what kinds of jobs would exist when they were ready for paid work; how to research and explore their interests; how to go about making informed decisions daily, and especially concerning their futures? Like so many other students, my children thought if they learned what was taught in school (regardless of whether they understood the relevance of the different subjects to one another or to anything else) and if they attended college, the rest would take care of itself. Well--it doesn't!

The problems of advocacy

My interest in career education started in 1972 when I attended the Governor's Conference on Career Education in Maryland. It took me a long time to realize that for most people, including educators, an understanding of the concept of career education came with considerable difficulty, if at all. And, of course, convincing an educational system to reexamine how it is delivering education is not an easy task either. It requires perseverance and ever-changing strategy to communicate effectively with ever-changing members of school boards and administrative staff. If the effort is not made at that level to adopt a system-wide policy, then implementation of the career education concept continues to be a piece-meal, hit-and-miss application, and many students continue to graduate high school with no idea of how to confront the life situations that lie ahead of them.

New focus of personal career interest

By now you have gathered that my career interest has shifted from technical editing and computers to education. I feel I have a contribution to make. I have found many educators and other members of the community who share my concerns and are eager to work toward the same goals. Yet, I know I will feel more comfortable working in this area if I take courses that educators take to broaden my perspective of education. Hence, I am now enrolled in the University of Virginia Master of Education Program in Social Foundations of Education.

One of the courses I elected to take is on "Futurism and Education." This has been a real eye-opener for me, and, I daresay, for the remainder of the class comprised mostly of educators.

Reactions of educators to computer technology in the classroom

Among other aspects of the future, we discussed the use of computer technology in the classroom. Initially, most of the educators were very negative, offering such comments as:

1. In order to use computers, a vocabulary of terms must be learned.
2. Teacher doesn't see an application at the elementary school level.
3. An aide would be needed to monitor those using the computer when the computer indicates, "Ask teacher."
4. All personal contact and paper practice will be eliminated.
5. The terminal serves more as entertainment than as a teaching instrument.
6. Electronic equipment frequently breaks down, resulting in loss of time.
7. Regardless of statements made by class lecturers, historically costs for equipment always rise.

8. Only a few students at a time can use the equipment.

9. Teacher would rather invest in materials that can be used more continuously.

10. This technology would disturb the human element.

11. Computers make errors.

12. Most of the equipment is made from petroleum-based products and depends upon electric power to function, thereby using up natural resources.

13. Parents will force it down educators' throats.

14. "It's not my concern, and I won't deal with it unless I have to."

These comments seemed to bear out the remark made in a class lecture by Dr. Larry Bowen, Dean of Professional Studies, George Mason University. He described educators as very conservative people who are afraid of new situations. He worries that unless they begin to deal with the whole set of complex new questions, controls will be lost.

There were also positive reactions in the class:

1. Students can learn to "teach" the computer. They can learn to write programs, a highly important intellectual exercise.

2. Computer learning is very good for drill/practice.

3. Equipment can be used in a center rather than in a classroom so that it isn't used without being monitored. The equipment can get maximum use if use is scheduled.

4. One teacher who had seen the computer in use in an elementary school said there was a lot of interaction among the students in responding to questions posed by the computer.

5. Computers will free the artist, as an example, to work more with the mind than with lengthy years of drill to develop hand skill (e.g., use of computers to design, and use of a laser to follow computer directions to sculpt).

Changing role of teachers

By the end of the course, opinions changed considerably. Reluctantly, more teachers could see their roles changing in the future. More could see the teacher becoming a "facilitator" to show students how to use the many resources available rather than serving as the primary source of information themselves.

It is interesting to note that education is one of the few remaining institutions where recognition is still given on a regular basis for longevity in a given job to people with as much as 20, 30, and more years of service. In an age when it is common for professionals to change jobs on an average of every four to five years, this means that the principal training for most teachers staying on the job took place well before most of the technological changes took place. However, even if one is this year's education graduate--what does that teacher or counselor or administrator know about evolving technologies and how to harness them for maximum benefit in the classroom? It is quite possible that librarians graduate better equipped to work with new technologies that may be applied to education.

II. COMMENTS ON EDUCATION AND THE FUTURE

The future for teachers

Arthur W. Combs, prominent humanist, says, "Once it was true that a teacher was regarded as one of the smartest people in town. Those days are gone forever. The information explosion has made the concept of the teacher as a fountainhead of knowledge ridiculous. Science has provided us with marvelous techniques for the dissemination of information: radio, television, movies, computers, recordings, and many more. These devices are capable of placing vast amounts of information in the hands of almost anyone quickly and efficiently. They have also made the role of the teacher as information provider obsolete."

Instructional technology, according to Christopher Dede, will be used for training ("limited range of right answers" such as for reading and basic math), and education ("multiple right answers" such as for writing) will be conveyed by human instructors.

The recent report to the Club of Rome (by James W. Botkin, Mahdi Elmandjra, and Mircea Malitza) maintains that educators need to be future oriented and that "educational technology, properly used, could aid greatly in freeing a teacher's time for more innovative tasks, including participatory learning...The ideal in participatory education is that every pupil should have the chance to play the role of president, captain, and leader, as well as citizen, supporter, and follower, so as to experience as many different kinds of roles as possible." The authors are apprehensive that obsolete subjects remain in school curricula and, further, that they obstruct the incorporation of more relevant concerns.

Costs of education

An IBM executive was quoted by Arthur B. Shostak as saying, "Time is on the side of technology. In round numbers, the per-pupil cost of public education in the U.S. has been rising at 10% per year compounded over the last 10 years...whereas the cost of computer technology has been dropping at the rate of about 25% per year for the last 20 years." To further elaborate, Dede warns, "Realistically, in ten years, we in formal education will have one-half of the fiscal resources that we have today: One-half of the salaries, the facilities, the books, the equipment, the maintenance, the transportation, and the administrative resources." There will be spiraling costs of energy, water, paper, and transportation/delivery of goods. We cannot afford the costly mistakes of previous years such the one Alvin Toffler cites: "The educational system was flooded with construction funds at precisely the moment when school-age population began to plummet, thus provoking an orgy of useless school building, followed by a cutoff of funds when they are most desperately needed for other purposes."

Career/lifelong education

Toffler sees that, "Over the long pull, however, we can expect education also to change. More learning will occur outside, rather than inside, the classroom. Despite the pressure from unions, the years of compulsory schooling will grow shorter, not longer. Instead of rigid age segregation, young and old will mingle. Education will become more interspersed and interwoven with work, and more spread out over a lifetime. And work itself--whether production for the market or prosumption for use in the home--will probably begin earlier in life than it has in the last generation or two...Growing up will be different. And so will the resultant personalities."

Bowman et al have another way of looking at age and education: "In a society changing as rapidly as ours, the idea that a person can learn enough by age eighteen--or twenty-one or twenty-eight--to be a productive citizen for the next sixty years is counterproductive. Moreover, the most intensive schooling now takes place in the worst developmental phase in the human life cycle to try to educate someone; puberty is a time when young people need a minimum of formal education and a maximum of life experiences. The present model of intensive schooling during childhood and adolescence should be replaced by a continuous educational process taking place in a variety of alternative educational environments. In this lifelong perspective of education, a person would never 'graduate.'"

The axiom that education should continue as long as life itself has been attributed to John Dewey; yet it is only in the most recent years, especially since the advent of career education, that schools have striven consciously to encourage learning and growth beyond entry in the job market.

Aging work force with wage benefits for the young

The composition of the work force in the future will continue to change. A study of the 80's by Clark Kerr and Jerome M. Rosow finds that due to low birthrates of the 1960's the absolute number of young workers is expected to fall sharply, and that both the absolute and relative drops in the number of young workers are likely to have sizable economic consequences, reversing previous patterns.

The older worker will remain in the workplace longer and larger numbers of females will participate across the work force. "With relatively few young workers, the age-earnings profile can be expected to twist in favor of the young, reducing the premium to older workers...the shortage of youth will mean severe problems for the educational system and a reduction in employment

of teachers and college faculty, at least relative to the overall work force." Kerr and Rosow warn also that the "excessive" number of 25- to 44-year-olds and the shortfall of younger workers "will create major personnel and labor-relations problems, on whose effective resolution industrial peace in the 1980s may depend."

In other countries

In the Soviet Union, according to sociologist and forecaster Igor Bestuzhev-Lada, it is expected in the year 2000 that "Schoolteachers will be able to devote more time to ethics and aesthetics, natural and social sciences, physical culture, work practices, and other important areas." It is projected also that schoolchildren are likely to spend more time watching television and going to the movies and that much emphasis will be placed on instructional films. Teaching and testing equipment will have a growing role at school, saving the teachers' time for individual instruction. Students will study to raise their general cultural level throughout their lives. At the same time, they will take advanced courses to raise their job qualifications every five to seven years, knowing that their work will be judged not by the diploma they receive but by the quality of their work.

Britisher Shirley Williams notes that changes in technology are coming so fast that industrial economies can remain competitive only by continuous updating of skills and knowledge. She points to Sweden as having a highly developed system for retraining adult workers. There, two percent of the work force is in training at all times, thereby making the transition to a new employment pattern relatively painless. There, as in other countries, the teacher is finding a new role to fill. Ms. Williams is concerned about the new technologies, which she says, "like all technologies, are morally neutral... cheap, flexible, dependent on knowledge and information as their main input,

(they) can free human beings from many of their current constraints, for instance constraints of resources, geography and location. But the new technologies could also enable those with power to control their fellow-citizens more effectively than in even the most efficient dictatorships of the past. They could impoverish large sections of the community by destroying jobs. The information society will make colossal demands on our imagination and ingenuity and on the capacity of our institutions to respond to new challenges."

III. THE TASK GROUP AS PLANNERS FOR EDUCATION

The issue at hand

Taking the bull by the horns, four professors in education (Jim Bowman, Fred Kierstead, Chris Dede, and John Pullian) collaborated to state a premise upon which this paper is based:

> "Future survival cannot depend upon educating an expert elite which soon becomes obsolete. Instead of waiting for cues from society, educators must become pro-active. They must anticipate educational problems of tomorrow and build the foundation for solving them today."

If educators do not take the initiative in planning for the future, they will lose the opportunity to assume leadership roles as shapers of change, rather than reactors and adapters to change. To a large extent, educators, by timely action, can even shape technological tools of the future by identifying their needs now.

Future considerations

The future holds many prospects--or problems, if they are not addressed now. A few of these considerations for educators include:

1. Protection of human values
2. New technologies applied to education
3. Economic productivity
4. Cost effectiveness of education
5. Realistic teacher preparation
6. Identification of jobs and job needs
7. Career education (which includes lifetime education)
8. Recognition of life experiences as educational experiences
9. Infusion of the arts into school curricula
10. Preparation for use of leisure time, which will be more abundant
11. Special populations and accommodations of their needs
12. Accommodations of multi-age, multi-ethnic, and multi-lingual needs and contributions in all aspects of society
13. The shortage of youth
14. Expanding sex roles
15. Changes in the nuclear family

The TASK GROUP as assessors/planners

It is time now to begin to study the future. Appropriate vehicles to accomplish this aim are broad-based TASK GROUPs, appointed by the local and state boards of education, and charged to:

1. Examine the schools (state-wide or system-wide) to find out the ways in which education is being delivered.

2. Project changes that education will have to accommodate in the future.

3. Recommend measures to make the accommodation possible.

The TASK GROUPs should be comprised of a broad spectrum of the education and general community: K-12 and post-secondary school administrators, teachers, counselors, librarians, students, parents, business, labor, industry, unions, professionals, and community-based organizations. Members should represent all possible curriculum areas, whether they are educators or not. Care should be taken also to include legal advisers in order to heed the warning of Thomas J. Flygare: "Looking ahead is an interesting--but difficult--endeavor. For example, who can predict the future impact of technology and research upon the schools? Equally unpredictable is the future legal and regulatory climate for education. One need only look at the last 25 years to realize that the relationship between the law and education can change dramatically in a quarter of a century."

TASK GROUPs comprised of so many sectors of the community could go a long way toward making recommendations to endorse those elements in education that have present and/or projected usefulness and to propose changes that will accommodate projected needs.

Planning for the future is not just another six-year plan. Dede and Dwight Allen put it into perspective in an article in the Phi Delta Kappan: "The magnitude of the problems educators face may seem overwhelming, but it is important to remember that sweeping reforms can emerge from small, incremental solutions to local problems, so long as these solutions are orchestrated into long-term trends that respond to society's needs and goals. This process of planning, innovating, and building represents our best chance for a high-quality educational system in the 21st century." The authors point out that a picture of education in the 21st century is emerging as a result of a major research project now taking place on the use of scenarios for strategic planning in education. This project is co-sponsored by the Education Section of the World Future Society and Virginia's own Old Dominion University. The TASK GROUPs would do well to consider this research.

Conclusion

In closing, it is urged that a high priority be given the formation of TASK GROUPs at state and local levels to help the respective education agencies prepare for delivery of education appropriate to anticipated needs.

It is well to remember the words of Harold G. Shane, University Professor of Education, Indiana University, in his article, "A Curriculum for the New Century":

> "We can no longer ask why don't they do something to improve our schools. Rather, we must say, What are the ways that we can shape a humane and decent future by the way we reorder the attitudes,

values, and behaviors that are prerequisite both to better ecological relationships with our physical world to better human environments in the home, the school, and the community. The 'human prospect,' as Robert Heilbroner labeled it, is not preordained. Rather, destiny is in our hands, and the prospect for human-kind will be what we make it."

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